PREDATOR ESCAPE BEHAVIOR BY FALL CANKERWORM LARVAE, *ALSOPHILA POMETARIA* (LEPIDOPTERA: GEOMETRIDAE)[1]

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ABSTRACT: Silk emission and dropping behavior in larvae of the fall cankerworm, *Alsophila pometaria,* enable the species to escape predation and ultimately reestablish contact with its tree host.

The fall cankerworm, *Alsophila pometaria* (Harris), is an omnipresent geometrid defoliator of deciduous forests in Canada, from the Maritime Provinces to Alberta, and in the eastern U.S. south to North Carolina and west to Missouri and Montana. Caterpillars are dimorphic, and a five to six week larval period in approximate synchrony with host tree foliation and with mid-summer increases in leaf tannins is a characteristic of the species' univoltine life cycle (Feeny, 1970; Schneider, in press).

While conducting an investigation at Coweeta Hydrologic Laboratory in the Nantahala Mountains of North Carolina, I observed fall cankerworm larvae responding to leaf-branch disturbances by writhing and subsequently dropping from trees on which they fed. In conjunction with this behavior, silk was produced, fibers anchored to grazed leaves, and strands emitted anteriorly as the insect dropped. With cessation of disturbance, suspended larvae were observed returning to host leaves by ingesting suspensory silk. Although this behavior may function also in larval wind dispersal, its primary function appears to be anti-predatory. Dropping behavior was experimentally induced by jarring infested branches, perhaps simulating perturbations of birds or other large predators, whereas swaying movements and wind disturbances proved ineffective in eliciting the response. A recent study of genetic variability in the fall cankerworm at Coweeta Hydrologic Laboratory has revealed possible *Alsophila pometaria* larval genotype-host tree associations (Deshefy, unpublished data). Additionally, the species is parthenogynogenetic (Mitter and Futuyma, 1977), and apterous adult females often deposit egg clusters on the same tree from which they dropped during prepupal metamorphosis (Schneider, in press). These data, combined with possible host specific synchrony of the insect's life cycle, suggest that, just as female aptery leads to possible recolonization of the same tree host over

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several generations, the described emission of silk and related dropping behavior similarly enable larvae to return to the same tree after successfully avoiding predation. These behavioral responses therefore appear to operate as an anti-predator adaption geared for reestablishing contact between the escaping phytophage and its individual tree host.

LITERATURE CITED

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